PATENT ABSTRACTS OF JAPAN

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(54) MILK BEVERAGE

(57)Abstract:
PROBLEM TO BE SOLVED: To obtain a milk beverage, excellent in storage stability with no anxiety of quality deterioration and precipitation of the beverage components caused by high-temperature spore bearing bacteria by adding polyglycerol fatty acid ester and sucrose fatty acid ester to the milk beverage of high milk components.
SOLUTION: The objective milk beverage contains ≥1.8% of milk fat, ≥80%, based on the milk fat content, of milk protein, in addition, (A) 0.02-0.3% polyglycerol fatty acid ester and (B) 0.03-0.3% sucrose fatty acid ester. In a preferred embodiment, the component A contains ≥70% of diglycerol palmitate from antimicrobial point of view. The component B contains palmitic acid and stearic acid in the fatty acid components in an amount of ≥80% in total where the content of the stearic acid is ≥50%. The component B preferably has an HLB value of 4-6. In the case of milk coffee, this beverage formulation reveals optimally marked effect.

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CLAIMS

[Claim(s)]
[Claim 1] The milk beverage which contains 80% or more of lactalbumin for part for 1.8% or more of milk fat, and milk fat as a milk component, and contains 0.02% - 0.3% of polyglyceryl fatty acid ester, and 0.03% - 0.3% of sucrose fatty acid ester.
[Claim 2] The milk beverage according to claim 1 which the degrees of polymerization of the glycerol which constitutes polyglyceryl fatty acid ester are 2-4, and the configuration fatty acid is chosen from a lauric acid, a myristic acid, a palmitic acid, and stearin acid, and is characterized by the content of monoester being 50% or more.
[Claim 3] The milk beverage according to claim 2 characterized by polyglyceryl fatty acid ester being diglycerol fatty acid ester.
[Claim 4] A milk beverage given in claim 1 thru/or any of 3 they are. [to which the fatty acid which constitutes sucrose fatty acid ester is chosen from a myristic acid, a palmitic acid, and stearin acid, and HLB is characterized by being 3-7]
[Claim 5] A milk beverage given in claim 1 thru/or any of 4 they are. [to which the content of polyglyceryl fatty acid ester is characterized by being 0.05% - 0.3%]
[Claim 6] A milk beverage given in claim 1 thru/or any of 5 they are. [to which the content of sucrose fatty acid ester is characterized by being 0.035% - 0.15%]
[Claim 7] A milk beverage given in claim 1 thru/or any of 6 they are. [which is characterized by a milk beverage being a cafe au lait]

[Translation done.]

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] This invention relates to the milk beverage containing part for 1.8% or more of milk fat. In detail, the deterioration under preservation, generating of precipitate, etc. are prevented and it is related with the milk beverage excellent in preservation stability.
[0002]
[Description of the Prior Art] Neutral milk beverages, such as a cafe au lait and milk tea, are drinks with which need is growing in recent years as a can drink etc. In process of commercial production, even if some strong heat-resistant elevated-temperature spore bearing bacteria pass through a sterilization process, it survives, and these drinks have caused [heat sterilization and] the deterioration of a drink in the circulation phase in preservation, although retort sterilization is usually given. As this cure, JP,8-228676,A has proposed adding polyglyceryl fatty acid ester, especially the diglycerol fatty acid ester whose degree of polymerization of a glycerol is 2.
[0003]
[Problem(s) to be Solved by the Invention] In a milk beverage, where the lipid of the milk component origin, protein, the polysaccharide originating in coffee beans etc. and a lipid, other solid content, etc. are emulsified, it exists. These are maintaining the emulsification condition by the emulsification force of the protein in a milk beverage, an emulsifier, emulsion stabilizer, etc. A milk component content follows on increasing, the amount of polyglyceryl fatty acid ester, such as diglycerol fatty acid ester which sticks to a milk component, increases, and the polyglyceryl fatty acid ester which contributes to antibacterial decreases. Therefore, it is necessary to make the addition of polyglyceryl fatty acid ester increase according to the content of a milk component. If it **(ed) and depended on this invention person's etc. examination, emulsification of milk fat would be barred, generating of oil-off, the increment in the amount of precipitate of a milk beverage component, etc. would be caused, and polyglyceryl fatty acid ester, such as diglycerol fatty acid ester, would reduce the quality of a milk beverage, when the addition increased. This invention is made in view of this situation, and the purpose is in offer of the milk beverage excellent in preservation stability without **** of the debasement by the deterioration by the elevated-temperature spore bearing bacterium, or the poor emulsification condition.
[0004]
[Means for Solving the Problem] this invention persons resulted that the amount of precipitate of a milk beverage decreased in the milk beverage with many milk component contents at a header and this invention by adding polyglyceryl fatty acid ester and sucrose fatty acid ester, as a result of repeating research wholeheartedly, in order to solve the above problems. That is, the summary of this invention consists in the milk beverage which contains 80% or more of lactalbumin for part for 1.8% or more of milk fat, and milk fat as a milk component, and contains 0.02% - 0.3% of polyglyceryl fatty acid ester, and 0.03% - 0.3% of sucrose fatty acid ester.
[0005]
[Embodiment of the Invention] This invention is explained to a detail below. A milk fat part content is [1.8% or more and the lactalbumin content of the milk beverage made into the object of this invention] 80% or more of range of a milk fat part content. Preferably, the amount of milk fat is 2.0% or more, and a lactalbumin content is 90% or more of range of a milk fat part content. In below the range concerned, it becomes unstable emulsifying the content of lactalbumin. In addition, in this specification,"%", unless it mentions specially, "% of the weight" is meant.
[0006] As polyglyceryl fatty acid ester used for this invention, the degrees of polymerization of the glycerol which constitutes polyglyceryl fatty acid ester are 2-4, and the configuration fatty acid is polyglyceryl fatty acid ester [as / whose content of monoester it is one or more kinds chosen from a lauric acid, a myristic acid, a palmitic acid and stearin acid, and is 50% or more]. In addition, polyglyceryl fatty acid ester is the constituent which ester which is [whenever / degree-of-polymerization and esterification] different mixed, for example, diglycerol ester means the polyglyceryl-fatty-acid-ester constituent with which the average degree of polymerization is set to 2. The polyglyceryl fatty acid ester which contains diglycerol palmitic-acid monoester 70% or more preferably from an antibacterial viewpoint is suitable. The content of the polyglyceryl fatty acid ester in a drink needs to be the amount which can fully prevent deterioration. Although this amount increases according to a part for the milk fat in a drink, and it differs even if it depends on the class of polyglyceryl fatty acid ester, and the class of milk beverage, and even the amount of about 200 ppm may not look at generating of deterioration, it cannot say that the content of 300-400 ppm is enough as

antimicrobial activity, but there is usually **** which carries out deterioration in the phase of preservation and circulation. Therefore, the content of polyglyceryl fatty acid ester is 0.06% or more still more preferably 0.05% or more preferably 0.02% or more. On the other hand, the content of polyglyceryl fatty acid ester is at most 0.3% or less. If there are many contents, since cost not only becomes high, but will spoil the flavor of a drink, it is not desirable.

[0007] as sucrose fatty acid ester used for this invention, a configuration fatty acid is chosen from a myristic acid, a palmitic acid, and stearin acid -- the content sum total of a palmitic acid and stearin acid is 80% or more preferably, and one or more kinds of contents of stearin acid are 50% or more of thing inside. As for HLB of sucrose fatty acid ester, it is desirable that it is [or more 3] six or less [4 or more] preferably seven or less. 0.035% or more of range is preferably suitable for the content of the sucrose fatty acid ester in a drink 0.03% or more. If out of range, the effectiveness concerned which controls precipitate is low. The content of sucrose fatty acid ester is 0.15% or less preferably at most 0.3% or less. If there are many contents, since cost not only becomes high, but will spoil the flavor of a drink, it is not desirable.

[0008] Especially the method of preparation of the milk beverage of this invention is not limited. For example, in the case of a cafe au lait, polyglyceryl fatty acid ester, sucrose fatty acid ester, and water are blended with drink components, such as a part for predetermined milk fat, a milk component of the amount used as lactalbumin, coffee extractives, sweetners, and perfume, and it homogenizes with a homogenizer etc., and sterilizes by retort sterilization, and a container is filled up. The various components added by the milk beverage besides above may be added, and other food-grade emulsifiers, a stabilizer, etc. can also be added if needed. As a milk beverage set as the object of this invention, entering milk, neutrality, or a weak acidic drink is mentioned. In a cafe au lait, there is remarkable effectiveness also in a cafe au lait and the tea containing milk especially.

[0009]

[Example] Hereafter, although an example explains this invention to a detail further, this invention is not limited to the following examples, unless the summary is exceeded. In addition, in the example and the example of a comparison, the following polyglyceryl fatty acid ester and sucrose fatty acid ester were used.

Polyglyceryl fatty acid ester;

Configuration fatty acid composition Palmitic acid 100% Monoester content 70% Polymerization degree 2

Sucrose fatty acid ester;

Configuration fatty acid composition Stearin acid 70%, palmitic acid 30% HLB 5 [0010] The example of reference (antibacterial trial of polyglyceryl fatty acid ester)

After mixing water to coffee extractives 3.7g, 1.8g of whole milk powder, 8g of granulated sugar, the polyglyceryl fatty acid ester of the specified quantity, and 0.05g of sodium bicarbonate and setting the whole quantity to 100g, a bulb homogenizer is used, and they are 20 kgf/cm2 at 60 degrees C. It homogenized and the cafe au lait was obtained (milk fat 0.48% per part). this -- the Clostridium thermostat aceti cam (Clostridium thermaceticum) spore suspension (1x105 concentration/ml) -- 0.1ml -- inoculating -- a glass tube -- every 2mlx -- it took five at a time, the opening edge was sealed by the flame, and it heat-sterilized for 20 minutes at 121 degrees C. The existence of deterioration was judged after saving this for four weeks at 55 degrees C. The difference in pH with an appearance and a **** inoculation division performed the judgment. The result was shown in the following table -1.

[0011]

[Table 1]

表－1　ポリグリセリン脂肪酸エステル抗菌試験

ポリグリセリンエステル添加量（ppm）	変敗本数
150	5／5
200	4／5
250	4／5
300	1／5
350	0／5

[0012] It poured 27g distributively each in each 30g test tube after homogenization by the pressure of 150kg / 50kg in 60 degrees C using the high-pressure homogenizer, having mixed 0.6g, 0.4g of sucrose fatty acid ester, and water for example 1 coffee extractives 37g, 68g of whole milk powder, 80g of granulated sugar, 1.3g of sodium bicarbonate, and polyglyceryl fatty acid ester, and having used the whole quantity as 1000g. This test tube was sterilized on 121 degrees C and the conditions for 20 minutes by retort pasteurizer, and the cafe au lait (the 1.7% of the amounts of lactalbumins, milk fat 1.8% per part) was obtained. Next, at 55 degrees C, two weeks and after putting for four weeks, the supernatant was calmly removed for the obtained cafe au lait. Precipitate was washed by desalted water, at-long-intervals alignment separation was carried out by 10000rpm for 15 minutes, the supernatant was thrown away, the precipitate which remained was freeze-dried, and the amount of precipitate solid content was measured. The result was shown in Table -2.

[0013] Except having set the addition of 0.2g and sucrose fatty acid ester to 0.4g for the addition of example 2 polyglyceryl fatty acid ester, the cafe au lait was obtained like the example 1, and the amount of precipitate solid content was measured. The result was shown in Table -2.
[0014] Except having set the addition of example of comparison 1 sucrose fatty acid ester to 0.25g, the cafe au lait was obtained like the example 1, and the amount of precipitate solid content was measured. The result was shown in Table -2. Although there were few amounts of Ushiro's precipitate solid content than an example 1, they were increasing from the example 1 after four weeks for two weeks you to be Haruka, so that clearly from a table.
[0015]
[Table 2]

表－２．

	沈殿固形分量（ｍｇ）	
	２週間後	４週間後
実施例１	１２．８	１９
実施例２	４．５	１７
比較例１	１０．６	２３．２

[0016] The cafe au lait of the above example and the example of a comparison was not accepted for deterioration by Ushiro's appearance observation for four weeks.
[0017] The cafe au lait was prepared like the example 1 except having set the addition of example 3 polyglyceryl fatty acid ester to 1.5g. The obtained cafe au lait was made into 25 degrees C, and organic-functions evaluation was performed in accordance with the criteria of Table -3. The average of grading of six persons' panelist was taken and the result of having rounded off the decimal point primacy was shown in Table -4.
[0018]
[Table 3] Table -3 4 which senses strong the 3:different taste which senses the 2:different taste which senses small the organic-functions valuation-basis 0:different taste-less 1:different taste: The different taste is sensed, so that it is unpleasant. [0019] Except having set the addition of 0.2g and sucrose fatty acid ester to 1.5g for the addition of example 4 polyglyceryl fatty acid ester, the cafe au lait was prepared like the example 3, organic-functions evaluation was performed, and the result was shown in Table -4.
Except having set the addition of 1.5g and sucrose fatty acid ester to 1.5g for the addition of example 5 polyglyceryl fatty acid ester, the cafe au lait was prepared like the example 3, organic-functions evaluation was performed, and the result was shown in Table -4.
[0020] Except having set the addition of example of comparison 2 polyglyceryl fatty acid ester to 3.2g, the cafe au lait was prepared like the example 3, organic-functions evaluation was performed, and the result was shown in Table -4.
[0021] Except having set the addition of 0.2g and sucrose fatty acid ester to 3.2g for the addition of example of comparison 3 polyglyceryl fatty acid ester, the cafe au lait was prepared like the example 3, organic-functions evaluation was performed, and the result was shown in Table -4.
[0022]
[Table 4]

表－４

	官能評価試験
実施例３	1
実施例４	0
実施例５	2
比較例２	3
比較例３	3

[0023]
[Effect of the Invention] The drink of this invention has little precipitate and it is excellent in preservation stability with the high milk content.

[Translation done.]

* NOTICES *

TECHNICAL FIELD

[Field of the Invention] This invention relates to the milk beverage containing part for 1.8% or more of milk fat. In detail, the deterioration under preservation, generating of precipitate, etc. are prevented and it is related with the milk beverage excellent in preservation stability.

[Translation done.]

* NOTICES *

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2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

PRIOR ART

[Description of the Prior Art] Neutral milk beverages, such as a cafe au lait and milk tea, are drinks with which need is growing in recent years as a can drink etc. In process of commercial production, even if some strong heat-resistant elevated-temperature spore bearing bacteria pass through a sterilization process, it survives, and these drinks have caused [heat sterilization and] the deterioration of a drink in the circulation phase in preservation, although retort sterilization is usually given. As this cure, JP,8-228676,A has proposed adding polyglyceryl fatty acid ester, especially the diglycerol fatty acid ester whose degree of polymerization of a glycerol is 2.

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EFFECT OF THE INVENTION

[Effect of the Invention] The drink of this invention has little precipitate and it is excellent in preservation stability with the high milk content.

[Translation done.]

TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] In a milk beverage, where the lipid of the milk component origin, protein, the polysaccharide originating in coffee beans etc. and a lipid, other solid content, etc. are emulsified, it exists. These are maintaining the emulsification condition by the emulsification force of the protein in a milk beverage, an emulsifier, emulsion stabilizer, etc. A milk component content follows on increasing, the amount of polyglyceryl fatty acid ester, such as diglycerol fatty acid ester which sticks to a milk component, increases, and the polyglyceryl fatty acid ester which contributes to antibacterial decreases. Therefore, it is necessary to make the addition of polyglyceryl fatty acid ester increase according to the content of a milk component. If it **(ed) and depended on this invention person's etc. examination, emulsification of milk fat would be barred, generating of oil-off, the increment in the amount of precipitate of a milk beverage component, etc. would be caused, and polyglyceryl fatty acid ester, such as diglycerol fatty acid ester, would reduce the quality of a milk beverage, when the addition increased. This invention is made in view of this situation, and the purpose is in offer of the milk beverage excellent in preservation stability without **** of the debasement by the deterioration by the elevated-temperature spore bearing bacterium, or the poor emulsification condition.

[Translation done.]

MEANS

[Means for Solving the Problem] this invention persons resulted that the amount of precipitate of a milk beverage decreased in the milk beverage with many milk component contents at a header and this invention by adding polyglyceryl fatty acid ester and sucrose fatty acid ester, as a result of repeating research wholeheartedly, in order to solve the above problems. That is, the summary of this invention consists in the milk beverage which contains 80% or more of lactalbumin for part for 1.8% or more of milk fat, and milk fat as a milk component, and contains 0.02% - 0.3% of polyglyceryl fatty acid ester, and 0.03% - 0.3% of sucrose fatty acid ester.

[0005]

[Embodiment of the Invention] This invention is explained to a detail below. A milk fat part content is [1.8% or more and the lactalbumin content of the milk beverage made into the object of this invention] 80% or more of range of a milk fat part content. Preferably, the amount of milk fat is 2.0% or more, and a lactalbumin content is 90% or more of range of a milk fat part content. In below the range concerned, it becomes unstable emulsifying the content of lactalbumin. In addition, in this specification,"%", unless it mentions specially, "% of the weight" is meant.

[0006] As polyglyceryl fatty acid ester used for this invention, the degrees of polymerization of the glycerol which constitutes polyglyceryl fatty acid ester are 2-4, and the configuration fatty acid is polyglyceryl fatty acid ester [as / whose content of monoester it is one or more kinds chosen from a lauric acid, a myristic acid, a palmitic acid and stearin acid, and is 50% or more]. In addition, polyglyceryl fatty acid ester is the constituent which ester which is [whenever / degree-of-polymerization and esterification] different mixed, for example, diglycerol ester means the polyglyceryl-fatty-acid-ester constituent with which the average degree of polymerization is set to 2. The polyglyceryl fatty acid ester which contains diglycerol palmitic-acid monoester 70% or more preferably from an antibacterial viewpoint is suitable. The content of the polyglyceryl fatty acid ester in a drink needs to be the amount which can fully prevent deterioration. Although this amount increases according to a part for the milk fat in a drink, and it differs even if it depends on the class of polyglyceryl fatty acid ester, and the class of milk beverage, and even the amount of about 200 ppm may not look at generating of deterioration, it cannot say that the content of 300-400 ppm is enough as antimicrobial activity, but there is usually **** which carries out deterioration in the phase of preservation and circulation. Therefore, the content of polyglyceryl fatty acid ester is 0.06% or more still more preferably 0.05% or more preferably 0.02% or more. On the other hand, the content of polyglyceryl fatty acid ester is at most 0.3% or less. If there are many contents, since cost not only becomes high, but will spoil the flavor of a drink, it is not desirable.

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[0008] Especially the method of preparation of the milk beverage of this invention is not limited. For example, in the case of a cafe au lait, polyglyceryl fatty acid ester, sucrose fatty acid ester, and water are blended with drink components, such as a part for predetermined milk fat, a milk component of the amount used as lactalbumin, coffee extractives, sweetners, and perfume, and it homogenizes with a homogenizer etc., and sterilizes by retort sterilization, and a container is filled up. The various components added by the milk beverage besides above may be added, and other food-grade emulsifiers, a stabilizer, etc. can also be added if needed. As a milk beverage set as the object of this invention, entering milk, neutrality, or a weak acidic drink is mentioned. In a cafe au lait, there is remarkable effectiveness also in a cafe au lait and the tea containing milk especially.

[Translation done.]

EXAMPLE

[Example] Hereafter, although an example explains this invention to a detail further, this invention is not limited to the following examples, unless the summary is exceeded. In addition, in the example and the example of a comparison, the following polyglyceryl fatty acid ester and sucrose fatty acid ester were used.
Polyglyceryl fatty acid ester;
Configuration fatty acid composition Palmitic acid 100% Monoester content 70% Polymerization degree 2
Sucrose fatty acid ester;
Configuration fatty acid composition Stearin acid 70%, palmitic acid 30% HLB 5 [0010] The example of reference (antibacterial trial of polyglyceryl fatty acid ester)
After mixing water to coffee extractives 3.7g, 1.8g of whole milk powder, 8g of granulated sugar, the polyglyceryl fatty acid ester of the specified quantity, and 0.05g of sodium bicarbonate and setting the whole quantity to 100g, a bulb homogenizer is used, and they are 20 kgf/cm2 at 60 degrees C. It homogenized and the cafe au lait was obtained (milk fat 0.48% per part). this — the Clostridium thermostat aceti cam (Clostridium thermaceticum) spore suspension (1x105 concentration/ml) — 0.1ml — inoculating — a glass tube — every 2mlx — it took five at a time, the opening edge was sealed by the flame, and it heat-sterilized for 20 minutes at 121 degrees C. The existence of deterioration was judged after saving this for four weeks at 55 degrees C. The difference in pH with an appearance and a **** inoculation division performed the judgment. The result was shown in the following table -1.
[0011]
[Table 1]
表－1　ポリグリセリン脂肪酸エステル抗菌試験

ポリグリセリンエステル添加量（ｐｐｍ）	変敗本数
１５０	５／５
２００	４／５
２５０	４／５
３００	１／５
３５０	０／５

[0012] It poured 27g distributively each in each 30g test tube after homogenization by the pressure of 150kg / 50kg in 60 degrees C using the high-pressure homogenizer, having mixed 0.6g, 0.4g of sucrose fatty acid ester, and water for example 1 coffee extractives 37g, 68g of whole milk powder, 80g of granulated sugar, 1.3g of sodium bicarbonate, and polyglyceryl fatty acid ester, and having used the whole quantity as 1000g. This test tube was sterilized on 121 degrees C and the conditions for 20 minutes by retort pasteurizer, and the cafe au lait (the 1.7% of the amounts of lactalbumins, milk fat 1.8% per part) was obtained. Next, at 55 degrees C, two weeks and after putting for four weeks, the supernatant was calmly removed for the obtained cafe au lait. Precipitate was washed by desalted water, at-long-intervals alignment separation was carried out by 10000rpm for 15 minutes, the supernatant was thrown away, the precipitate which remained was freeze-dried, and the amount of precipitate solid content was measured. The result was shown in Table -2.
[0013] Except having set the addition of 0.2g and sucrose fatty acid ester to 0.4g for the addition of example 2 polyglyceryl fatty acid ester, the cafe au lait was obtained like the example 1, and the amount of precipitate solid content was measured. The result was shown in Table -2.
[0014] Except having set the addition of example of comparison 1 sucrose fatty acid ester to 0.25g, the cafe au lait was obtained like the example 1, and the amount of precipitate solid content was measured. The result was shown in Table -2. Although there were few amounts of Ushiro's precipitate solid content than an example 1, they were increasing from the example 1 after four weeks for two weeks you to be Haruka, so that clearly from a table.
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	沈殿固形分量（ｍｇ）	
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[0017] The cafe au lait was prepared like the example 1 except having set the addition of example 3 polyglyceryl fatty acid ester to 1.5g. The obtained cafe au lait was made into 25 degrees C, and organic-functions evaluation was performed in accordance with the criteria of Table -3. The average of grading of six persons' panelist was taken and the result of having rounded off the decimal point primacy was shown in Table -4.
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[Table 3] Table -3 4 which senses strong the 3:different taste which senses the 2:different taste which senses small the organic-functions valuation-basis 0:different taste-less 1:different taste: The different taste is sensed, so that it is unpleasant. [0019] Except having set the addition of 0.2g and sucrose fatty acid ester to 1.5g for the addition of example 4 polyglyceryl fatty acid ester, the cafe au lait was prepared like the example 3, organic-functions evaluation was performed, and the result was shown in Table -4.
Except having set the addition of 1.5g and sucrose fatty acid ester to 1.5g for the addition of example 5 polyglyceryl fatty acid ester, the cafe au lait was prepared like the example 3, organic-functions evaluation was performed, and the result was shown in Table -4.
[0020] Except having set the addition of example of comparison 2 polyglyceryl fatty acid ester to 3.2g, the cafe au lait was prepared like the example 3, organic-functions evaluation was performed, and the result was shown in Table -4.
[0021] Except having set the addition of 0.2g and sucrose fatty acid ester to 3.2g for the addition of example of comparison 3 polyglyceryl fatty acid ester, the cafe au lait was prepared like the example 3, organic-functions evaluation was performed, and the result was shown in Table -4.
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表－４

	官能評価試験
実施例３	1
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実施例５	2
比較例２	3
比較例３	3

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